Institutional Adaptations to Climate Change –

Social Sciences Research in Canada & Chile

Darrell R. Corkal, *P. Eng.*

PFRA-ARAP

Saskatoon, SK

BEC

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Agriculture and Agri-Food Canada
Prairie Farm Rehabilitation Administration

Agriculture et Agroalimentaire Canada
Administration du rétablissement agricole des Prairies

Canada

Outline

- Background & Project description
- Benefits of PFRA involvement
- Possible PFRA involvement
  - Basic
  - Moderate
- Next Steps

Background

- **Funding Agency:**
  - Social Sciences and Humanities Research Council (SSHRC)
  - Program: Major Collaborative Research Initiative (MCRI)
  - SSHRC is to social sciences what National Sciences & Eng'g Research Council (NSERC) is to physical sciences
- **Applicant: University of Regina**
  - Dr. Polo Diaz, University of Regina's Dept. of Sociology
- **LOI proposed social sciences research on:**
  - Institutional capacity to adapt to climate change, and its impact with water resources and society.
  - $2.43 million study

PFRA involvement to date

- January, 2003
  - U of R requested PFRA & D. Corkal participation in Letter of Intent
- May, 2003
  - SSHRC approved LOI to next detailed stage of competition
- July, 2003
  - Fred Kraft and Darrell Corkal participated in detailed proposal
  - PFRA provided a letter of support to the project
- September, 2003 detailed proposal submitted
- December, 2003: SSHRC awarded funding.
- April, 2004 Results-based 30 month work plan meeting
  - Detailed partner commitments required
  - PFRA must decide on commitment

PFRA is the most important non-academic Collaborator on this research project

PFRA ARAP

Research Co-investigators

- **University of Regina:**
  - **Polo Diaz, David Gauthier, David Sauchyn, Gregory Marchildon**
- **Other investigators from:**
  - **University of Saskatchewan, Guelph, British Columbia, Canada**
  - **University of La Serena, ARCIS, , Chile**
- **Collaborators:**
  - **Darrell Corkal, AAFC- PFRA**
  - **Humberto Zavala, ULS Civil Engineering**
  - **Numerous other partners**

Research Goals: What is the project?

- Identify physical & social vulnerabilities to water resources in two dryland regions
- Examine effects of climate change
  - Historic, present and future
- Assess technical and social adaptive capacities
  - Investigate adaptive capacities of institutions and society

SSHRC was keenly interested in this inter-disciplinary research (water, society, climate), and the strength of the research team

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Study locations & time periods

- **Study areas include:**
  - **South Sask River Basin (AB and SK)**
  - **Institutions, economies, social policy, governance**

- **Periods of study**
  - **1930s (historic situation and adaptation)**
  - **2000 (current state and institutional capacity)**
  - **2050 (forecasted state, by climate change models)**

Study Methodology

- Assessment of
  - Institutions and society
  - Historic, present and potential future
- Global Climate change models
- GIS mapping
  - physical & social capacities and vulnerabilities
- Researchers
  - Canadians study Canada
  - Chileans study Chile
  - All work on Comparisons
- Knowledge Transfer

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South Sask River Basin Stats

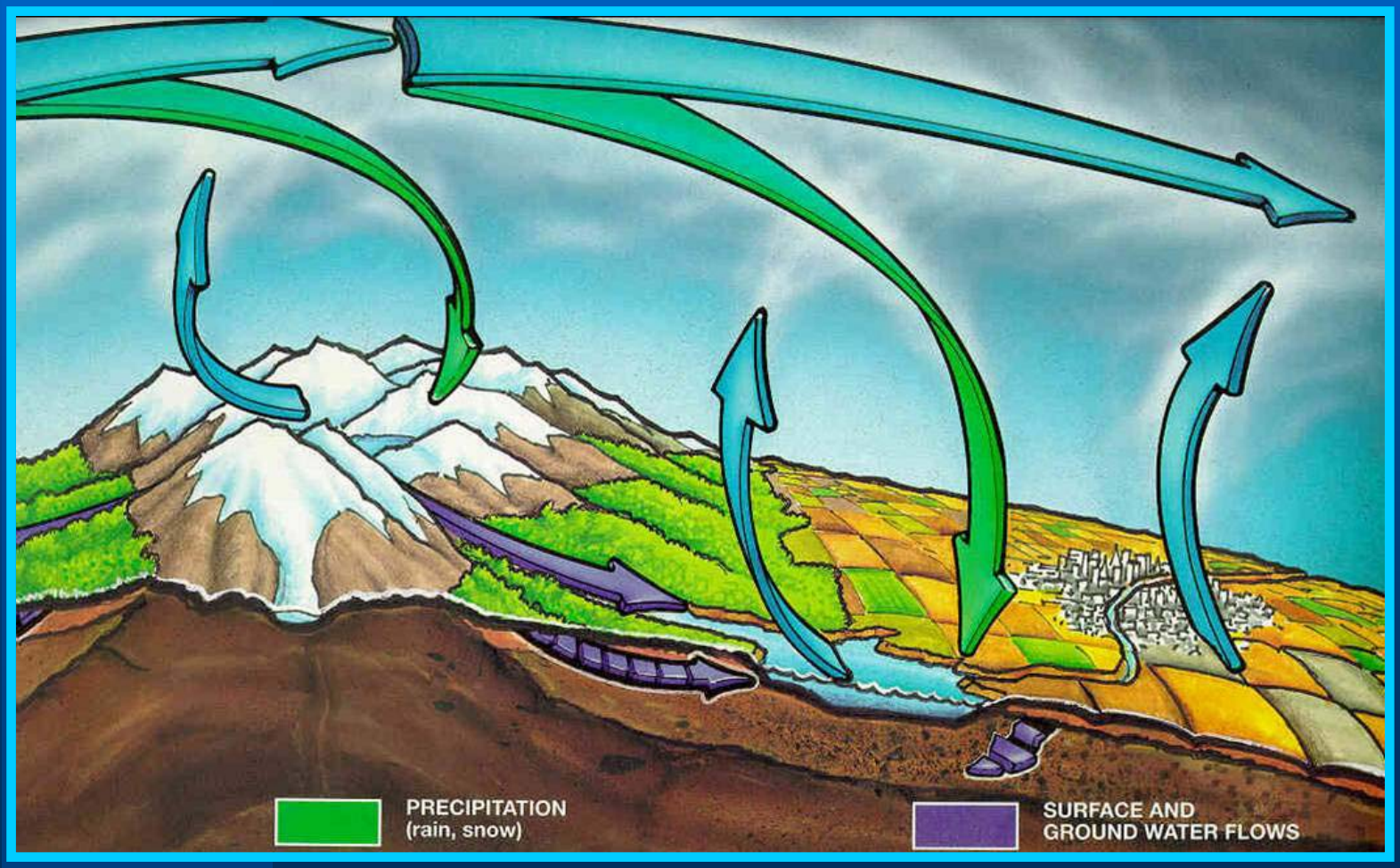
- 420,000 km^2
- 1,500,000 people (65% in 5 major urban centers)
- Two provincial gov’ts, 225 rural communities
- Five major watersheds
  - Bow, Oldman, Red Deer, South Sask AB, South Sask SK
- Major agricultural investment
- Significant irrigation reliance for field crops
  - 38 districts servicing over 600,000 ha

South Sask River Basin

- **Numerous players**
  - **Governments**
    - Fed, Prov, Urban & Rural municipalities, regional, local
  - **Numerous departments and agencies**
    - Health, Environment, Ag, Natural Res., Fisheries
  - **Sector groups**
    - Ag, Energy, Processing, Forestry, for-profit industry
  - **Environmental groups**
    - NGOs, wildlife, habitat preservation, parks, recreation

In the cross-cutting theme of Water, the maze is: "Who does what, how, where, when, and why?" We do not have Integrated Water Resource Mgmt

South Sask River Basin



Coquimbo Water Basin Stats

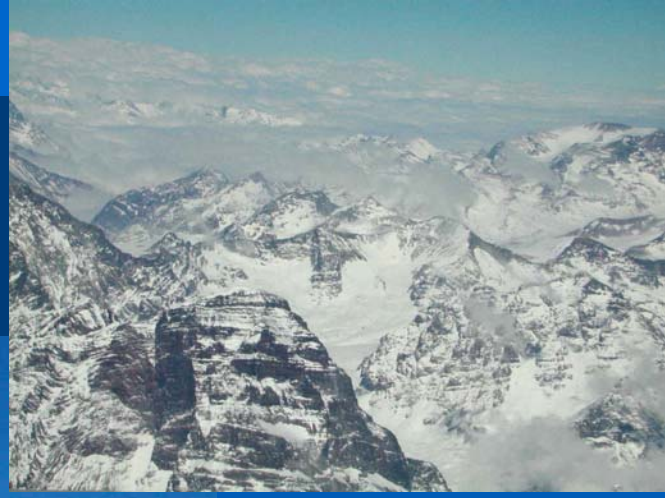
- 41,000 km^2 (5.5 % of Chile)
- 605,000 people (4% of Chile's population)
- Three large urban centers
- Regional agencies; 15 local governments, many NGOs
- Three major watersheds: Elqui, Limari, Choapa
- Major agricultural and mining investment
- Significant irrigation reliance for grape and brandy export
  - At risk to climate change and pressure on water resources
  - Gateway to driest deserts in the world
  - A potential analogue to Saskatchewan in 2050

PFRA ARAP

Coastal mountain valleys

High value Export crops Grapes, Brandy

Elqui River Basin:
- mountain watershed



Innovative Crop Management

SSHRC Award: Institutional Adaptations to Climate Change

- $2.43 million to University of Regina
- Duration:
  - 5 years
  - April 2004 to March 2009
- Funding distribution supports research:
  - 14 academic professors at 6 universities
  - 4 PHD and 30 masters students (theses)
  - Miscellaneous research disbursements
    - E.g. two conferences, research travel, two journalism students, tech transfer materials, web-development, third party expenditures

Potential Research Benefits

- **Increased knowledge of:**
  - **Societal risks caused by climate change impacts on water resources**
  - **Institutional capacity to adapt to risks**
  - **Societal coping responses**
  - **Policy needs for sustainable development**

This research has a unique possibility of investigating linkages between physical and social scientists – an essential element in future water policy & governance

PFRA ARAP

Why should PFRA be involved?

- U of R asked for PFRA collaboration, due to past & present water resources expertise
  - PFRA was created as a federal response to drought
  - PFRA will be both a participant and an object of the research study
- PFRA is the most important non-academic partner
- PFRA, and AAFC, will develop new knowledge about society and water, and potential implications caused by climate

PFRA Commitment (Basic)

- Assessing vulnerabilities
  - South Sask River
  - Water resources
  - Link to Canadian Agencies
- Helping social scientists
  - Design of survey instrument
  - Stakeholder meetings in Canada
- Liaison with research team
  - Institutional capacities
  - Knowledge transfer, flash/video production

PFRA Commitment (Basic)

- Request Research Assistant support from U of R for:
  - History?
  - Policy?
  - Governance?
  - Hydrology?
  - Geography?

What would help PFRA and the research?

Possible PFRA Basic Commitment?

Employee/Discipline	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
1. Darrell Corkal Water Resources (Project Collaborator)	0.1	0.3	0.25	0.25	0.3	0.3
2. Hydrologist	0	0.3	0.3	0.3	0.3	0.1
3. GIS	0	0.3	0.3	0.3	0.3	0.1
4. Climate	0	0.3	0.3	0.3	0.3	0.3
5. Policy/Economist	0	0.1	0.2	0.3	0.3	0.3
6. Tech Transfer	0	0.2	0.25	0.35	0.5	1.0
Total	0.1	1.5	1.6	1.8	2.0	2.0

Possible Moderate Commitment?

- Study could be expanded
- Options:
  - Dedicated physical science support
    - E.g. hydrology, geography, GIS
    - Expanded knowledge & tech transfer support
  - Research participation
    - E.g. policy review, social science studies on water programming
    - E.g. history student with Marchildon working at PFRA, social scientist with Diaz, or physical scientist

Is PFRA interested in linking social and physical sciences? How?

Next Steps ?

- BEC decision needed prior to April 20
  - Nature and degree of commitment
- U of R and PFRA discussions:
  - Possibilities for masters research student
  - Terms of reference for PFRA commitment
  - Financial arrangements
- All participants will establish obligations and deliverables in the Project Planning Meeting on April 27-30, 2004

Questions ?

- **This project be helpful in developing a water strategy now and for the future.**

Possible 2nd project: CIDA Tier 2 Rural Community Water Conservation

- 2nd U of Regina request for PFRA involvement
- Currently awaiting award decision by CIDA
- $1 M; 5 years
- Purpose:
  - To increase the understanding of competition for water in an area severely affected by desertification (Coquimbo Water Basin)
  - Develop training and resource materials on sustainable development and environmental management for rural citizens
  - Capacity building of University of La Serena in water resources